REMARKS

Claim Objection

Claim 22 was objected to for depending from claim 10 and being presented following claim 21, which depends directly from claim 20 and indirectly from claim 14. Claim 22 is hereby amended to depend from independent claim 14. In view of the amendment above and remarks below regarding independent claim 14, reconsideration is respectfully requested.

Claim Rejections

Claims 1, 4, 12, 14 and 15 were rejected under § 102(e) as being anticipated by the Lindner et al. patent (U.S. Pat. No. 6,640,140). Claims 2, 7-8, 13, 18-19 were rejected under § 103(a) as being obvious in light of Lindner et al. and the Papadopoulos et al. patent (U.S. Pat. No. 6,061,603). Claims 5 and 16 were rejected as obvious in light of Lindner et al. and the Brown et al. patent (U.S. Pat. No. 6,542,925). Claims 6, 9-11, 17 and 20-22 were rejected as obvious in light of Lindner et al., Brown et al. and Papadopoulos et al.

The Lindner et al. patent was filed on October 10, 2000 and the Brown et al. patent was filed on February 21, 2001, which in both cases is less than one year before the September 28, 2001 filing date of the present application. As an initial matter, therefore, Applicants wish to make clear that, in responding as stated herein, Applicants do not concede that either the Lindner et al. patent or the Brown et al. patent is in fact prior art to the present invention nor waive any rights with regard to contesting the status of these patents at a later date.

No substantive amendments to the claims are being made herein because the claims are believed to recite subject matter that is readily distinguishable from the disclosure of the cited references. Reconsideration of the allowability of the pending claims is thus respectfully requested in light of the following remarks.

Each of the three independent claims (claims 1, 12 and 14), and thereby all pending claims, recite a world wide web interface module that can establish communication from a remote client with an I/O module of an industrial control system without intervention of the controller's PLC.

The Office's position is that this is taught by Lindner et al., particularly at col. 3, lines 54-64. Applicants respectfully submit that it is not. For one thing, Lindner et al. disclose a PLC controller 10a (see col. 3, lines 44-46) that has both a ladder scanning module 11 and a web server module 12. As such, the operation of the web server requires operation of the PLC 10a, regardless of whether the device is connected directly (as in 23a), through a local network (as in 23b) or via the Internet (as in 23c) (see col. 3, lines 54-57). The PLC is thus in play at all times that the controller is operating.

The Lindner et al. device thus fails to recognize the principle benefits of the present invention, which as stated at paragraph 11 of the present application, is to (1) allow initial set up and trouble shooting of the controller during periods of inoperability of the PLC and (2) effect rapid access to I/O data without execution time restraints of the PLC.

Further, as stated at col. 4, line 60 to col. 5, line 6, the PLC performs both the ladder scan task at module 11 and the web server task at server 12 via a single central processing unit in "parallel threads", which means the web server task is processed simultaneously with, or as a background task to, the ladder scan task. Since the PLC performs both functions using a single processor, the PLC is burdened whenever a web server task is performed, which is not the case with the claimed invention.

It should also be noted that the Lindner et al. patent discloses using the Internet as a means of communicating data between the PLC and the sensor/actuator devices or the like at the industrial process. Thus, it is disclosed merely that the Internet replaces either a direct or local network connection to these devices. The Lindner et al. patent does not disclose that the Internet is employed to connect the controller with a remote client, especially for purposes of effecting remote control of the controller. On the other hand, the present invention can provide a remote human machine interface to an industrial controller with a direct connection to one or more I/O modules in addition to a connection to the PLC.

Accordingly, claims 1, 12 and 14 (and thereby dependent claims 4 and 15) are believed to be anticipated by the Lindner et al. patent.

The Papadopoulos et al. patent is cited in support of the obviousness rejections for much of the remaining claims, however, it does not provide the missing teaching with respect to providing an Internet connection from a remote client to an I/O module of an industrial control system without intervention of the controller's PLC. The Brown et al. patent is likewise believed to be missing the requisite teaching.

The dependent claims are considered allowable in that the independent claims from which they depend are believed to be novel and non-obvious in light of the cited patents.

Dependent claims 2 and 13 claim an additional feature of the present invention that is not taught by the combination of the Linder et al. and Papadopoulos et al. patents. Specifically, these claims recite that the PLC may submit a command executed by the stored program that restricts the direct writing of data to the I/O module(s). This feature provides for an autonomous Web server interface to the PLC without the control process disruption that could otherwise arise from unsynchronized control data from one or more remote clients.

None of the cited references teaches this. The Office suggests that this is taught by combining the disclosure of Lindner et al. at col. 4, lines 35-45 and Papadopoulos et al. at col. 6, lines 38-45. The cited passage of the Lindner et al. patent merely states that the HTTP server 32 and the file server 20 of the controller 10a communicate ladder scan information and display instructions readable by a browser 52 of a remote computer. This in no way correlates to data writing control for the I/O module(s) nor preventing data writing conflicts. The cited passage of the Papadopoulos et al. patent merely states that requests to access the read/write register of the PLC 32 are processed by the back plane driver 56 at the end of a scan interrupt by sending commands to the PLC via memory 38. This does not teach either the need, or a means, for preventing data writing conflicts that may

arise because of conflicting instructions from one or more remote clients and/or the PLC.

Thus, claims 2 and 13 are believed allowable for these additional reasons.

Conclusion

Accordingly, claims 1-22 are believed to in allowable form in light of the above remarks and the amendment to the dependency of claim 22. Reconsideration and allowance of these claims is thus respectfully requested.

Neither the total number of claims nor the number of independent claims was been chanced. Thus, no fees are believed necessary for consideration of this response. Nevertheless, should any additional fees be needed for full consideration of this amendment, please charge any fees believed necessary in connection with this response to Deposit Account 17-0055.

Respectfully submitted,

Brian A. Batke, et al.

By: _____

Steven J. Wietrzny
Reg. No. 44,402
Attorney for Applicant
Quarles & Brady LLP
411 East Wisconsin Avenue
Milwaukee, WI 53202
(414) 277-5415